Key to the genus *Cupiennius* (Araneae, Ctenidae)

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The following key includes the description of the coloration patterns in the genus *Cupiennius*, typical of living representatives of the species. In the larger species, this permits determination of the species even for subadult specimens, although the coloration may be indistinct or even absent in preserved specimens. The shape of the epigynum, vulva and bulbal sclerites is then of major importance. Especially the smaller species of *Cupiennius* have an indistinct or variable coloration pattern on their body and legs. Their determination is only possible by dissection of the vulva (females) or by looking at small details of the male bulb. The present key is in essence a reprint of parts of an earlier publication (Barth & Cordes 1998). It includes all important features of the genitalia already described in Lachmuth et al. (1984). Besides including *C. remedius* and *C. celerrimus*, it considers body size and characters of the coloration pattern and of the genitalia. The definition of the colours used in the key is taken from the colour table for coloured pencils of Faber-Castell, Germany. For *C. chiapanensis* (Medina Soriano 2006) and *C. vodou* (Brescovit & Polotow 2005), two recently described new species, the reader is referred to the original literature.

Adult Females

1. Large spider (carapace length > 9 mm); legs and/or body with conspicuous markings or colour pattern 2

   Medium-sized spider (carapace length < 9 mm); legs and/or body uniformly brown or with comparatively indistinct or variable markings 4

2.(1) Legs brown with conspicuous dark markings . . 3
   Femora I-IV bright carmine-red ventrally; prosoma and opisthosoma medium to dark brown dorsally with a darker median band; ventral opisthosoma without any dark markings (Fig. 2); epigynum with narrow median septum, widening distally; distal part of septum with strongly sclerotised hook (Fig. 8a) . . . . . *coccineus*

3.(2) Femora I-IV with distinct black annular patterns; prosoma with light greyish-brown pattern dorsolaterally contrasting with the darker median band; coxae densely covered with terracotta red hairs ventrally; ventral opisthosoma always with broad black median stripe (Fig. 1); in some specimens, pairs of yellowish to whitish spots distolaterally on both sides of the cardiac mark; epigynum with narrow median septum of uniform width (Fig. 8a); body length up to 45 mm (largest species) . . . . . *salei*
   Femora I-IV on the ventral side with many small black spots, either sternum or both sternum and coxae (variable) dark brown to black (Fig. 3); dorsally, body coloration distinct and species-specific: median dark band on prosoma, coloured areas laterally on the body; dark cardiac mark (opisthosoma); dark inverse V-shaped stripes, distal to cardiac mark; ventral opisthosoma light brown (populations from Barro Colorado Island and from Panama were observed to have only a dark median ventral opisthosomal band, and no speckled femora). A greyish morph and an orange morph exist. Epigynum with broad median septum of roughly uniform width, but widening distally (Fig. 8a); distal part of septum with sclerotised nose-like process . . . . . *getazi*

4.(1) Epigynal plate oval or trapezoid 5
   Epigynal plate distinctly triangular (Fig. 8b); median septum of epigynum strongly widened distally forming a sphere; seminal receptacle I cone-like; body colour in general uniformly greyish to brownish, ventral opisthosoma with outlines of a dark median band, consisting of a series of short dark reddish hairs (Fig . 4) . . . . . *cubae*

5.(4) Lateral plate of epigynum directly connected to the median septum forming a loop (Fig. 8b) . . 6

   Lateral plate of epigynum not directly connected to the median septum and extending to the anterior-lateral border of the epigynal plate (Fig. 8a) 8

6.(5) Epigynum with narrow median septum, seminal receptacles I with seminal ducts of different shapes: S-shaped, twisted, winding or rolled . . 7

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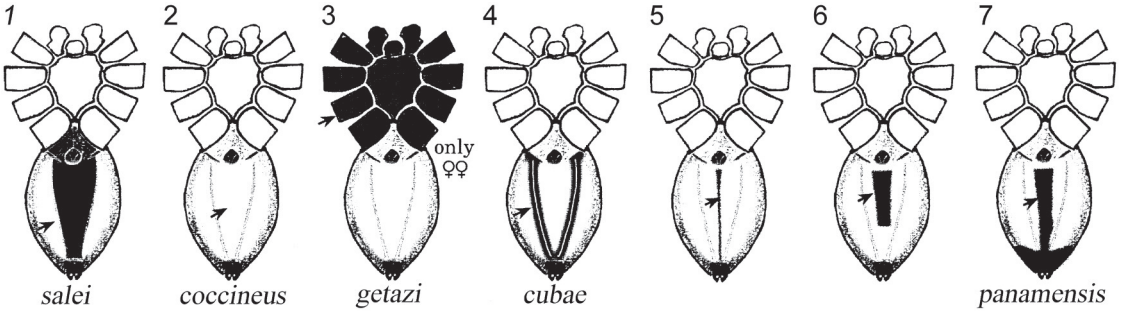


Figs. 1-7: Schematised view of the ventral body of different species of *Cupiennius* to show diversity of ornamental patterns (see arrows). (**1**) *C. salei*; (**2**) *C. coccineus*; (**3**) *C. getazi*; (**4**) *C. cubae;* **(5-7)** Smaller *Cupiennius* species, range of pattern variability ((**7**) *C. panamensis*).

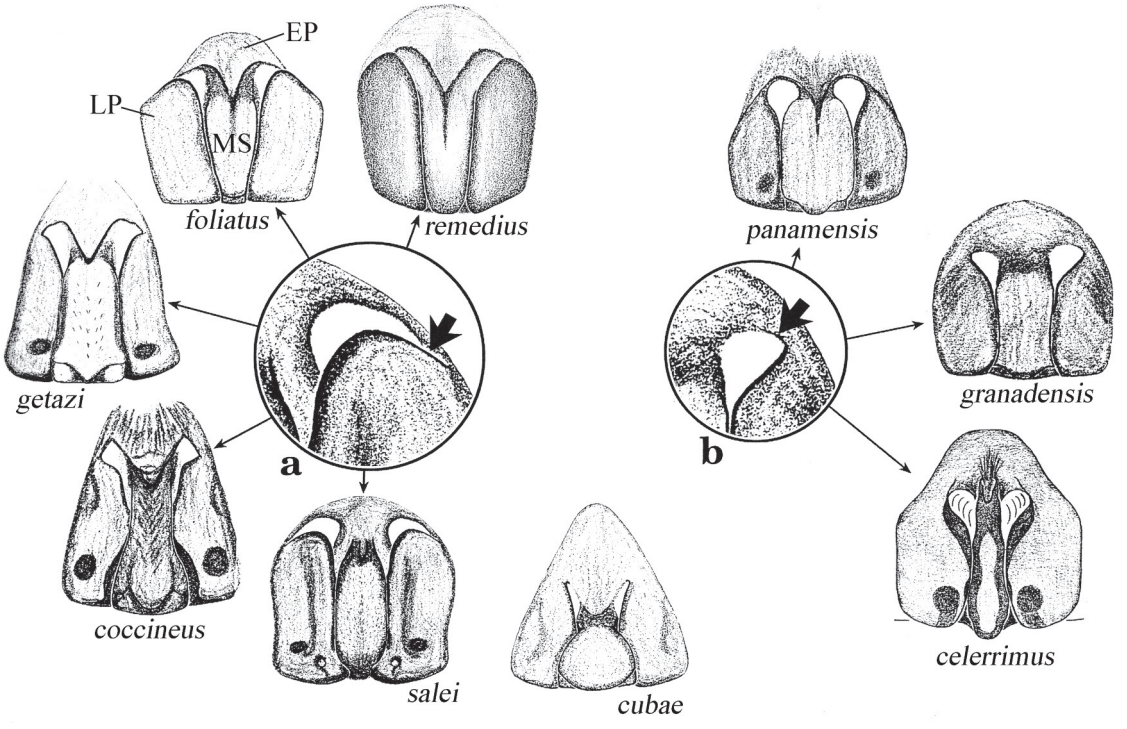


Fig. 8: Ventral view of epigyna of the females of nine species of *Cupiennius*. Note two groups (**a**) and (**b**) which differ with regard to the way in which the lateral plates are connected to the epigynal plate anterio-laterally. EP = epigynal plate, LP = lateral plate, MS = median septum. Modified and adapted from Lachmuth et al. 1984 and from Brescovit & von Eickstedt (1995) (*C. celerrimus*)

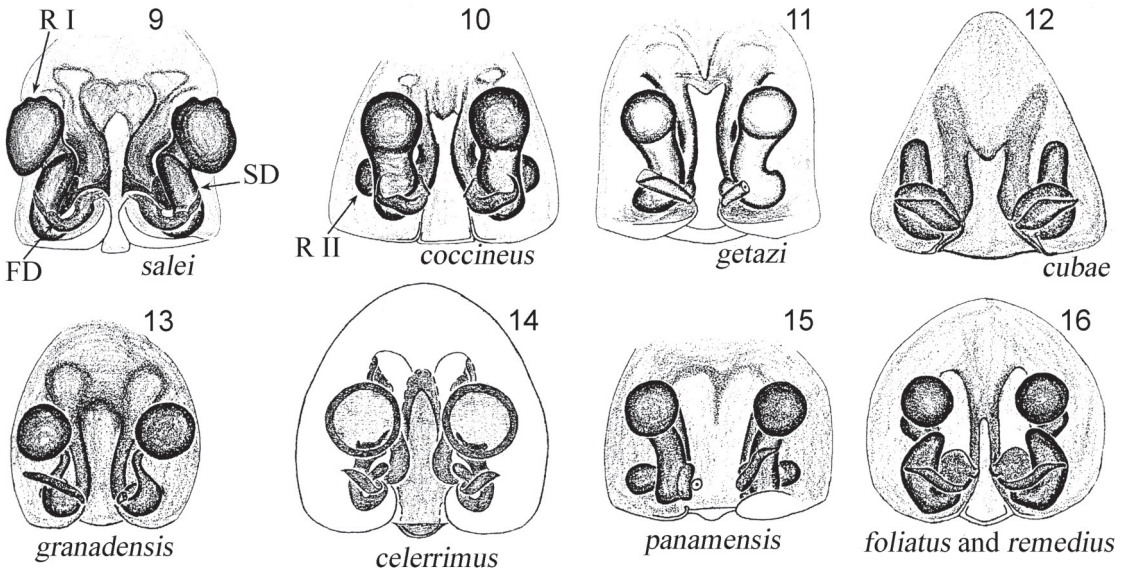
Epigynum wider than long (Fig. 8b); median septum broad and leaf-like; vulva: seminal receptacles I ball-shaped with seminal ducts sturdy and slightly curved laterally (Fig. 15); prosoma light brown; opisthosoma darker brown, with narrow darkly shaded median band ventrally (Fig. 6); smallest species . . . . . *panamensis*

7.(6) Median septum with parallel borders, distally ending broad, and with a small hook (Fig . 8b); vulva: seminal receptacles I with distinctly S-shaped seminal ducts (Fig. 13) . . . . . *granadensis*

Median septum long, narrow and slightly widening distally (Fig . 8b); vulva: seminal receptacles large and ball-shaped, seminal ducts rolled dorso-ventrally (Fig . 14); body orange to brown with darker brown median band, legs I-IV yellow ventrally on coxae and femora . . . . . *celerrimus*

8.(5) Lateral plates of epigynum ending rounded before connecting to the epigynal plate (Fig. 8a), median septum of epigynum narrow and continuously narrowing distally (Fig. 8a); vulva with ball-shaped seminal receptacles, seminal ducts strongly winding (Fig. 16); medium large spider (carapace length 7-8 mm); annular patterns on femora, and body remarkably spotted; tarsi of legs I-IV with long dark hairs both dorsally and ventrally . . . . . *remedius*

Lateral plates of epigynum ending as indicated in Fig. 8a before connecting to the anterior-lateral end of the epigynal plate, median septum of epigynum as in Fig. 8a; seminal receptacles I ball-shaped, seminal ducts as in Fig. 16; small spider (carapace length up to 7 mm); body without distinct colour pattern or with a series of dark spots along the cardiac mark on the opisthosoma . . . . . *foliatus*



Figs. 9-16: Epigyna of the females of nine *Cupiennius*-species. Seen in dorsal view (from inside) and showing the seminal receptacles I and II (R I, R II), the seminal duct (SD) and the fertilisation duct (FD). Modified and adapted from Lachmuth et al. 1984 (Figs. 9-13, 15, 16) and Brescovit & von Eickstedt (1995) (Fig. 14).

Adult Males

1. Large spider (carapace length > 9 mm). Legs with conspicuous markings (except one case, see 2); body light grey, light brown to medium brown or bright orange dorsally; ventral opisthosoma with or without broad dark median stripe 2

   Medium-sized spider (carapace length < 9 mm) . Legs and/or body uniformly brown or with indistinct markings, or prosoma and opisthosoma with variable arrangement of more or less isolated dark dots and lines; opisthosoma light ventrally or with a narrow dark median stripe 4

2.(1) Legs and/or body with conspicuous markings. . 3

   Legs without conspicuous coloration; legs and body grey-brown with median band on dorsal prosoma consisting of thin dark lines; light opisthosoma with dark cardiac mark, lacking dark markings ventrally; bulb with terminal apophysis bent downwards, embolic apophysis strongly curved and twisted (Fig. 18) . . . . . *coccineus*

3.(2) Femora I-IV with distinct black annular patterns ventrally; body greyish dorsally with dark lines along the length of the prosoma (= median band); sternum and coxae greyish; opisthosoma with broad dark median band ventrally; bulb with large terminal apophysis bent downwards, embolic apophysis robust and curved (Fig. 17); body length up to 30 mm (largest species) . . . . . *salei*

   Femora I-IV with many small black spots ventrally; sternum and coxae dark brownish (variable); conspicuous species-specific body coloration: a dark median band dorsally on prosoma and opisthosoma bordered by light areas laterally; dark cardiac mark dorsally on opisthosoma, and dark inverse V-shaped stripes posterior to it; two morphs with either greyish or orange basic coloration. Bulb with terminal apophysis bent downwards, embolic apophysis strongly curved and twisted (Fig . 19) . . . . . *getazi*

4.(1) Opisthosoma with narrow dark median stripe ventrally (Figs. 5-7) or without ventral markings 5

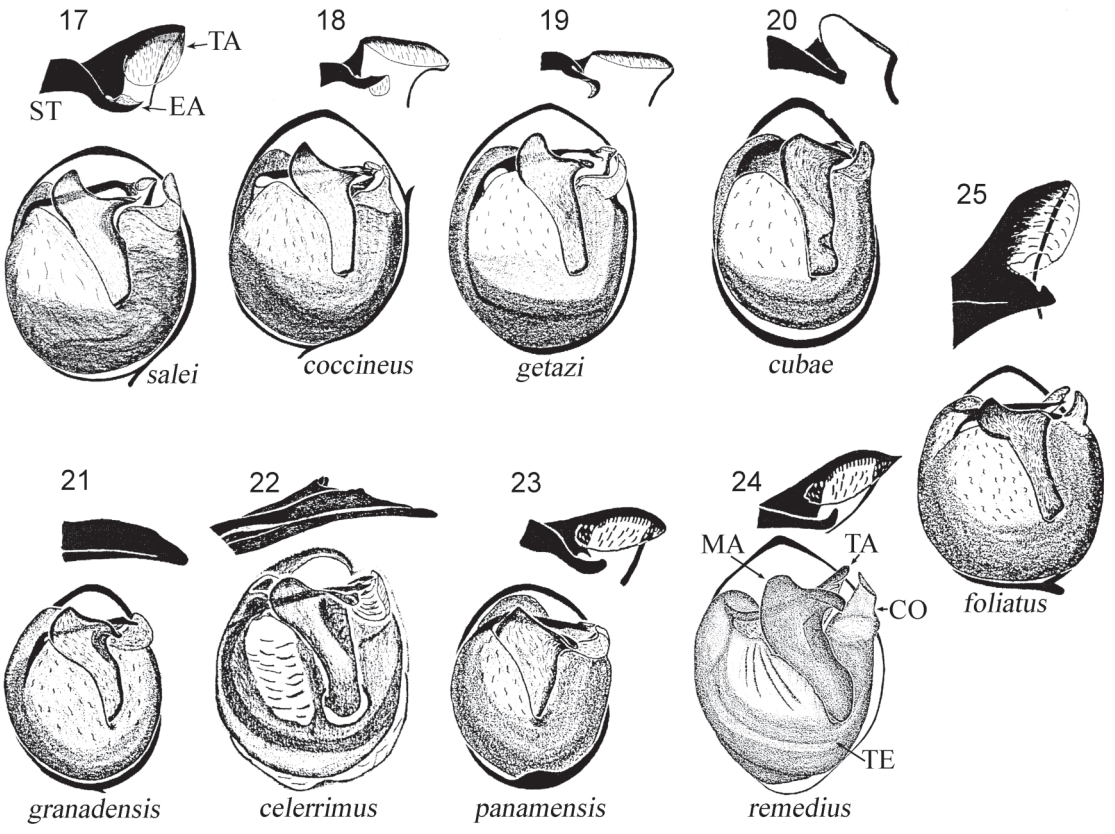
   Opisthosoma only with dark reddish outlines of the ventral median stripe (Fig. 4); bulb (Fig. 20) with median apophysis comparatively straight and notched in the proximal third of its length, distal process and lateral shovel-like process very small, terminal apophysis strongly domed and extending over the short embolic apophysis. Body greyish or brownish . . . . . *cubae*

5.(4) Bulb with embolic base (stipes-embolus) massive (Figs. 21, 22), terminal and embolic apophysis not distinct 6

   Embolic base (stipes-embolus) with distinct terminal and embolic apophysis (Figs. 17-20, 23-25) 7

6.(5) Embolic base (stipes-embolus) bill-shaped and folded forming one furrow (Fig. 21); body light yellow-brown with a sparse covering of hairs; prosoma with median line markings dorsally. . . . . *granadensis*

   Embolic base (stipes-embolus) strongly folded forming two furrows (Fig. 22); embolic tip appears severed with a pair of short processes; body and legs orange with a brown median band on prosoma and opisthosoma; ventral surface of coxae and femora yellow . . . . . *celerrimus*



Figs 17-25: Bulbi genitales and terminal parts of the embolus of the males of all nine species of *Cupiennius*. CO = conductor, EA = embolic apophysis, MA = median apophysis, SE = stipes embolus, TA = terminal apophysis, TE = tegulum. Modified and adapted from Lachmuth et al. 1984 (Figs. 17-21, 23, 25) and from Brescovit & von Eickstedt (1995) (Fig. 22)

7.(5) Terminal apophysis levels with the embolic base (stipes-embolus) (Figs. 23, 24) 8

Terminal apophysis elevates at an angle of approximately 45° at the embolic base (Fig. 25) and covers the embolic apophysis; opisthosoma with a variable line of spots along the border of the cardiac mark. . . . . *foliatus*

8.(6) Carapace length ca. 8 mm; body with spotted coloration pattern dorsally; legs long (sexually dimorphic), covered with a "brush" of long and thin hairs along the tibia and metatarsus and with the longest hairs at the proximal part of the tibia-metatarsus joint; median apophysis with an elevation near the lateral process, tegulum with deep furrows ventrally . . . . . *remedius*

Carapace length ca. 5 mm; body without distinct coloration pattern dorsally; dorsal opisthosoma darker than prosoma and with a small dark median band ventrally, widening towards the posterior part of the opisthosoma (Fig. 7) . . . . *panamensis*

References

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